Traffic Signals

Over the years, INDOT has heard thousands of questions regarding traffic signals. In order to understand how INDOT decides where to place traffic controls, one must understand the purpose, warrants and guidelines set forth by the Uniform Manual on TrafficControl Devices.

What Does a Traffic Signal Do?

A traffic signal assigns the right of way at an intersection. When properly installed at an intersection that meets the warrants, a signal provides the following benefits:

It moves traffic in an orderly manner.

It reduces the frequency of certain types of accidents, especially right-angle types.

It may be interconnected with other signals to provide nearly continuous movement of traffic at a definite speed.

It may be used to interrupt heavy traffic at intervals to permit others traffic to cross.

When a signal is installed improperly or at the wrong location, it has the following disadvantages:

It can cause excessive delay, which increwases driver aggravations and encourages motorists to disobey the signal indications.

It may increase the frequency of certain types of accidents, especially rear collisions.

A signal works primarily by stopping traffic. Anytime a car stops on a highway, the danger exists that a following motorist will not notice the stopped vehicle until it is too late.

We have seen that a traffic signal is not a cure-all. It may solve some problems at an intersection, but it may contribute to others. A signal at the wrong location can cause accidents or congestion, or both. For this reason, your safety requires that INDOT investigate each signal request carefully.

What rules do you follow?

The Indiana Manual on Uniform Traffic Control Devices governs the installation of traffic signals on all roads in the state. The manual, used by all state, county and local government agencies, is derived from a similar U.S. Manual to insure uniform applications throughout the country.

To qualify for a traffic signal, a location must meet one of the three primary volume signal warrants. The seven supplemental warrants should be considered as an advisory condition, and do not mandate the installation of a traffic signal.

Primary Warrants

- Vehicular Volume “Warrant”: Where the volume of intersecting traffic is the principal reason for signal consideration and minimum volumes are met on the major street and the higher-volume minor-street approach.
- Interruption of Continuous Traffic “Warrant”: Where the traffic volume on a major street is so heavy that traffic on a minor intersection street suffers excessive delay or hazard in entering or crossing.
- Pedestrian Volume “Warrant”: Where there is a combination of heavy vehicular traffic and crosswalk volume.

Secondary Warrants

- School Crossing “Warrant”: Where there are insufficient gaps in normal traffic during the time school children use the crossing.
- Progressive Movement “Warrant”: Where, at carefully selected locations within an interconnected signal system, it is possible to group vehicles and regulate group speeds.
- Accident Experience “Warrant”: Where accidents have been reported that could be corrected by a signal.
- Systems “Warrant”: Where two major routes intersect or where it is desirable to interconnect one signal system to another.

- Combination of “Warrants”: Where no single primary warrant is met, but where two or more of the three primary warrants are 80% satisfied.
- Traffic Signals on New Facilities “Warrant”: Where at new intersections based on predicted volumes that meet prescribed minimum levels. Temporary traffic signals may become permanent only after investigation verifies that a permanent signal is warranted.
- Special Access Signalization “Warrant”: Where at schools, industrial plants, shopping centers and other special locations, where surges of traffic occur in relatively short durations.

You may have noticed that traffic volumes play a large role in many of the “warrants”. Experience has shown that if the volumes are below a certain value (which varies with the physical characteristics of the intersecting roads), the chances are that a signal would not help move traffic.

How do you decide if a signal is needed?

When a request for a signal is received:

- A traffic count is conducted at the intersection to determine if vehicle volumes meet required levels.
- INDOT reviews the types of accidents that have occurred at the intersection and whether that type can be corrected by a signal. Signals alone cannot prevent left-turn accidents. A traffic signal can only assign the right of way, it cannot guarantee it. A motorist must still use caution on entering an intersection even when the signal is green. The investigation may also indicate that other traffic control devices or road modifications would be better than a signal for reducing accidents. Among the other traffic controls which may be considered are: no parking zones, flashing beacons or stop signs.

A field study of the location is made by a traffic investigator. Statistics can be misleading, so after studying the traffic counts and accident records, the traffic investigator makes one or more field inspections to observe the physical characteristic of the intersection and behavior of the traffic. When necessary, the local police and other officials are also contacted to hear their first-hand account of the traffic conditions. Only then is an action recommended. If a signal is “warranted,” the engineer must also decide if it should be pre-timed or traffic-actuated. If it is not “warranted,” he must decide whether other traffic control devices or road modifications should be used, based on their own warrants.

Who pays for a new traffic signal?

When a signal is installed at a state highway intersection, the state generally pays the entire cost. If an intersection is formed by a state highway and a local road, the local government agency may pay a small percentage of the cost in order to expedite installation.

In the case of a signal installed to service a private commercial or industrial establishment (such as a shopping center), the private interest pays the complete cost of installation and major maintenance.

But regardless who pays for it, INDOT’s decision to install a signal is not based on how much the signal will cost.

Indiana Code

IC 9-21-3-1
Sec. 1. Each traffic control signal on a street or highway within Indiana must conform with the standards, specifications, and warrants set forth in the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways.

IC 9-21-3-2
Sec. 2. (a) Each traffic signal installation on a street or highway within Indiana may be erected only after the completion of traffic engineering studies that verify that the traffic signal control is necessary as set forth in the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways.